

## **MAIRS Product Metadata of Regional Ground-based Observation:**

**Metadata Attributes:** project name, summary, measurements, location, temporal coverage, data policy, project web page, person of contact

### **Projects includes in this document:**

CMD/CMA

CFOIS

WATER

AERONET

CEOP

ARM

SMART-COMMIT

## **China Meteorological Data at CMA**

### **Summary:**

In Situ measured meteorology data from many standard stations in China are available online from National Meteorological Information Centre, China Meteorological Administration. The data from many international exchange stations are open to the public, including daily, 10-day, monthly, annual meteorology elements. Many other types of ground-based data are also available online with certain level of restriction.

### **Measurements:**

surface pressure, atmosphere temperature, humidity, wind, precipitation, sunshine-hour, cloud, etc.

### **Location:**

There are about 30,000 ground meteorology stations in China, including automated stations. Data from many stations, including about 160 WMO standard exchange ground meteorology stations, are accessible without restriction.

**Temporal Coverage:**

1951-present

**Data Policy:**

Data at China Meteorological Data Sharing Service System have restriction levels. The data of restriction level 0 and 1 are open to the public. For example, the daily and monthly meteorology data from WMO standard ground stations are open to the public. For more about the data policy, please read <http://cdc.cma.gov.cn/index.jsp>

**Project web page:**

<http://cdc.cma.gov.cn/>

**Person of Contact:**

National Meteorological Information Centre: [cdc@cma.gov.cn](mailto:cdc@cma.gov.cn)

## **The Coordinated Field Observation Integration Study (CFOIS) in the Arid and Semi-arid Regions of China**

**Summary:**

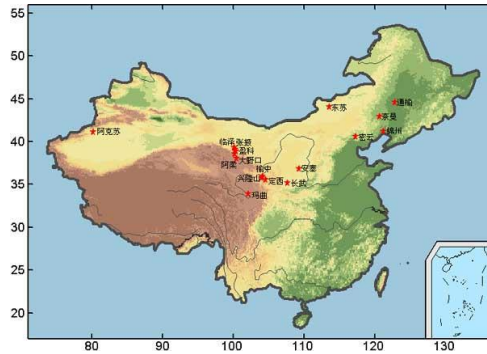
CFOIS is a program under the Key Laboratory of Regional Climate-Environment for Temperate East Asia (RCE-TEA) and Monsoon Asia Integrated Regional Study (MAIRS) office, Institute of Atmospheric Physics (IAP), Chinese Academy of Science. There are about 40 observational sites in the arid and semi-arid regions of northern China, managed by a number of institutions, such as Chinese Academy of Sciences (CAS), Chinese Ministry of Education (CME), Ministry of Science and Technology (MOST) and China Meteorological Administration (CMA), etc.

**Measurements:**

- Water vapor, CO<sub>2</sub>, and heat fluxes;
- Wind speed, temperature and water vapor profiles in the atmospheric boundary layer;
- Ecological variables;
- Soil temperature and moisture at different depths

**Location:**

About 40 stations at Northern China



**Temporal Coverage:**

July 1 2008 – September 30 2008

**Data Policy:**

- All in-situ observational data are shared by all participating sites.
- Modeling results and assimilation data will be shared within CFOIS.
- Data will be open to the public after data quality control and publications in the future. Please contact PI or station contact(s) for data and usage.

**Project web page:**

<http://observation.tea.ac.cn>

**Person of Contact:**

Zhuguo Ma, [mazg@tea.ac.cn](mailto:mazg@tea.ac.cn)

Key Laboratory of Regional Climate-Environment Research for Temperate East Asia, CAS

## Watershed Airborne Telemetry Experimental Research (WATER)

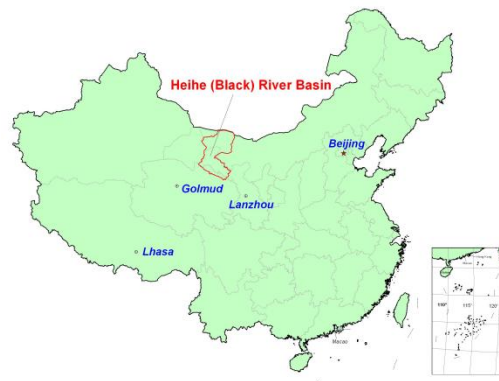
**Summary:**

Watershed Airborne Telemetry Experimental Research (WATER) is program to conduct simultaneous airborne, satellite-borne and ground-based remote sensing experiments in the Heihe (Black) River Basin, the second largest inland river basin in the arid regions in Northwest China. The WATER program is the first multi-scale land surface and hydrological experiment in a cold and arid region. The mission of WATER program is to improve the observability, understanding, and predictability of hydrological and related ecological processes at catchmental

scale; accumulate basic data for the development of watershed science; and promote the applicability of quantitative remote sensing in watershed science studies.

### Location:

Heihe (Black) River Basin in Northern China



### Measurements:

- Cold region hydrology experiment:
  - Airborne -- microwave radiation brightness temperature, snow cover, snow depth, frozen soil, vegetation types, terrain, and land surface roughness
  - Simultaneous ground – snow (snow depth, density, temperature, liquid water equivalent and grain size), frozen soil (surface temperature, liquid water content and ice content), vegetation
  - Long-term ground -- snow cover, snow depth, snow density, soil moisture (liquid water and ice equivalent of frost), soil temperature, frost depth, precipitation (rainfall and snowfall), evapotranspiration, infiltration, hydraulic conductivity, thermal conductivity and heat capacity in freeze/thaw status, and other meteorological variables at different altitudes, river discharge, microwave brightness temperatures and spectral characteristics of snow cover and frozen soil.
  - Satellite -- multi-spectral data (Landsat TM, ASTER, CBERS, IRS-P6, SPOT VEGETATION), hyper-spectral data (Hyperion, MODIS), and high resolution data (SPOT5, IKONOS or QuickBird), radar satellite data (ASAR, ERS-1/2, Radarsat-1, JERS-1, and PALSAR), and satellite-borne passive microwave brightness temperature data (AMSR-E and SSM/I)
- Forest hydrology experiment:

- Airborne -- vegetation parameters (chlorophyll, LAI, vegetation water content, leaf nitrogen concentration, and photosynthesis, etc.); soil parameters; forest (forest height, canopy vertical structure, canopy density/LAI, tree basal area, growing stock /biomass, etc.)
- Simultaneous ground -- vegetation type, components temperatures, SMC, ET, albedo, photosynthesis, species diversity, crown canopy structures, density/LAI, forest growing stock/biomass, chlorophyll, vegetation water content (VWC) and land surface roughness, precipitation, runoff, flow
- Satellite – evapotranspiration (ET), canopy structure, component temperature, roughness and microwave brightness temperature
- Arid region hydrology experiment: similar to forest hydrology experiment
- Meteorological elements and radar precipitation experiment:
  - Radar -- precipitation from Doppler weather radar
  - Conventional station -- surface wind, air temperature, relative humidity, pressure; precipitation, pan evaporation; land surface temperature, soil temperature and water content of soil; sky condition (cloud cover, cloud form, visibility, sand-dust, etc.) and weather process; frost depth in frost tubes
  - Hydro-meteorological observation stations – profile of wind, air temperature, air relative humidity; solar and longwave radiation; multilayer soil temperature, water content of soil and thermal flux; vegetation growth condition

#### **Temporal Coverage:**

2007 August-September and October-November, pre-experiment

2008 March-April and June-July, airborne remote sensing and ground observation

#### **Data Policy:**

Contact project PI

#### **Project web page:**

<http://water.westgis.ac.cn>

<http://water.westgis.ac.cn/indexenglish.asp>

#### **Person of Contact:**

Xin Li, [lixin@lzb.ac.cn](mailto:lixin@lzb.ac.cn)

<http://water.westgis.ac.cn/english/contact.asp>

Cold and Arid Regions Environmental and Engineering Research Institute, CAS

## **AEROSOL ROBOTIC NETWORK (AERONET)**

### **Summary:**

The AERONET (AEROSOL ROBOTIC NETWORK) program is a federation of ground-based remote sensing aerosol networks established by NASA and [PHOTONS](#) and is greatly expanded by international collaborators. The program provides a long-term, continuous database of aerosol optical, microphysical and radiative properties for aerosol research and characterization, validation of satellite retrievals, and synergism with other databases.

### **Location:**

There are many sites at Asian monsoon study region, such as Beijing, Taihu, Dunhuang, Hangzhou, Huangshan, Bareilly, Jaipur, Noto, Osaka, etc. The detailed AERONET site information can be found at: [http://aeronet.gsfc.nasa.gov/cgi-bin/site\\_info](http://aeronet.gsfc.nasa.gov/cgi-bin/site_info)

### **Measurements:**

- Aerosol optical depth – angstrom, AOD fine/coarse mode, AOD fine mode fraction, etc.
- Aerosol inversions – size distribution, refractive index, absorption optical depth, extinction optical depth, single scattering albedo, asymmetry factor, phase functions, etc
- Solar flux – pyranometer, PAR
- Ocean color – Lwn (with f/Q correction), no sites in Asian Monsoon region as of Dec 2009

### **Temporal Coverage:**

1992 – present

Note: the data temporal coverage varies with measured parameter and site

### **Data Policy:**

Open to public

### **Project web page:**

<http://aeronet/>

### **Person of Contact:**

AERONET operation staff:

[http://aeronet.gsfc.nasa.gov/new\\_web/contacts.html](http://aeronet.gsfc.nasa.gov/new_web/contacts.html)

## **Coordinated Energy and Water Cycle Observations Project (CEOP) Reference Sites**

### **Summary:**

Coordinated Energy and Water Cycle Observations Project (CEOP) has globally distributed "reference" stations, providing enhanced observations of sub-surface (soil profiles), surface (standard meteorological and radiation), near surface (flux tower), atmospheric profiles (rawinsonde and profiler), and ancillary data sets (radar, special observations) in a common format.

### **Location:**

A number of reference sites are established over Asian Monsoon regions, such as Tibet, Tongyu, Northern Mongolia, Southern Indonesia, Western Pacific Ocean, Northern South China Sea-Southern Japan, etc. See CEOP reference data gateway for site information:

<http://www.eol.ucar.edu/projects/ceop/dm/>

### **Measurements:**

- Surface Meteorology and Radiation
- Meteorological Tower
- Soil Temperature and Moisture
- Flux

### **Temporal Coverage:**

2001-2004 (35 sites global), 2007-2011 (52 sites global)

See CEOP reference data gateway for site information:

<http://www.eol.ucar.edu/projects/ceop/dm/>

### **Data Policy:**

See CEOP data policy:

[http://www.eol.ucar.edu/projects/ceop/dm/documents/ceop\\_policy.html](http://www.eol.ucar.edu/projects/ceop/dm/documents/ceop_policy.html)

### **Project web page:**

CEOP Page: <http://www.ceop.net/>

CEOP database: <http://www.eol.ucar.edu/projects/ceop/dm/>

**Person of Contact:**

CEOP office: <http://www.ceop.net/>

**Atmospheric Radiation Measurement (ARM)****Summary:**

U.S. Department of Energy's Atmospheric Radiation Measurement (ARM) Climate Research Facility provides radiative, sounding, and lidar data to worldwide scientists for studying the interactions between clouds, aerosol, and radiation.

**Location:**

Five ARM sites over the Tropical Western Pacific were established from 1996 to 2002 (Manus, Papua New Guinea, Nauru Island, Darwin, and Australia). Recently, four Mobil Facility were established in China (Xianghe, Taihu, Shouxian, and Zhangye). Please check with ARM project for details of the site information.

**Measurements:**

Aerosols, carbon, cloud, atmospheric state, radiometric, surface properties. See details at:

<http://www.arm.gov/measurements>

**Temporal Coverage:**

1996 – present, the temporal coverage changes for each site.

**Data Policy:**

Open to the public

**Project web page:**

<http://www.arm.gov/>

**Person of Contact:**

ARM data support: [dmfsupport@pnl.gov](mailto:dmfsupport@pnl.gov)



## Surface-sensing Measurements for Atmospheric Radiation Transfer – Chemical, Optical, and Microphysical Measurements of In-Situ Troposphere (SMART-COMMIT)

### Summary:

Surface-sensing Measurements for Atmospheric Radiation Transfer – Chemical, Optical, and Microphysical Measurements of In-Situ Troposphere (SMART-COMMIT) is a NASA project to measure complex atmospheric chemistry, radiation data through ground-based instruments in order to better understand the composition of the atmosphere and the physical processes that take place in it, and to develop new approaches and techniques to explore the Earth-atmosphere system. SMART-COMMIT are mobil. The measurements are conducted at a number of location globally through a field campaign.

### Measurements:

Backscatter Profile

Irradiance (Solar global irradiance, solar diffuse irradiance, solar direct irradiance, IR irradiance, UV)

Radiance (Sun photometer, spectrometer)

Aerosols ( size, optical properties)

Gas concentration (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, NO)

Meteorological (temperature, relative humidity, wind, precipitation)

### Location:

The field campaigns over Asian monsoon region are:

BASE-ASIA in Thailand, February-May 2006

EAST-AIPE in China, Jan-June 2005

ACE-Asia in China, Japan, and Korea, March-May 2001

### Temporal Coverage:

2001-2006, please check field campaign time.

### Data Policy:

Please consult with the Principle Investigator or any of the site contact(s)

**Project web page:**

<http://smart-commit.gsfc.nasa.gov/>

**Person of Contact:**

SMART-COMMIT scientists: [http://smart-commit.gsfc.nasa.gov/SMART-COMMIT%20 %20Staff.html](http://smart-commit.gsfc.nasa.gov/SMART-COMMIT%20%20Staff.html)